REMARKS/ARGUMENTS

Claims 1-4 and 6-26 are pending.

Claims 1, 3 and 6-7 have been amended.

Claim 5 has been cancelled.

Claims 21-26 have been added.

Support for the amendments is found in the claims and specification, as originally filed. Claim 1 comprises the limitations of original claims 1 and 6 (see also page 2 of the specification and figures 1-2). Support for claim 6 can be found in original claim 6 and at page 2 and figures 1-2. Support for claims 21-23 can be found in original claims 1 and 5-6 and at pages 2-3 and figures 1-2. Support for claim 24 can be found in original claim 1 and at page 2 and figures 1-2. Support for claims 25-26 can be found at page 3, line 31 to page 4, line 19, and the Examples. No new matter is believed to have been added.

Applicants amend the specification and request that the objection the specification be withdrawn.

With regard to the crossed out reference AX (Bohning et al., *Chem.-Ing. Tech.*, 57(8):682-684 (1985)) in the IDS filed 10/15/2007, Applicants submit a Relevancy Statement in English outlining the disclosure of the reference. Applicants request that the Examiner considers the reference and return a signed and initialed copy of the IDS to Applicants.

Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph. Claim 1 has been amended to clarify that filling aid can either be free of radially extending elements OR can have spacers extending perpendicular to the longitudinal direction of the filling aid. If the filling aid has spacers extending outward, the area of their projection can be negligible compared to the cross section of the flexible body (page 2, lines 19-21 of the present specification).

Also, the filling aid does have "a projection onto a plane perpendicular to the longitudinal direction of the filling aid" because the filling aid has a finite, no matter how small, diameter (page 2, line 36 to page 4, line 3; the Examples). The filling aid is, for example, a nylon string having a diameter 2.5-5 mm, or a tape having a thickness of 0.5-2 mm and width 5-10 mm (page 2, line 36 to page 4, line 3). Figures 1 and 2 schematically illustrate the invention and are not meant to reflect a proportional scale. The filling aid on Fig. 1-2 does have "thickness" (e.g., a line thickness), and therefore, does have the projection onto a perpendicular plane, no matter how small.

Claim 6, as amended, is directed to one of the two arrangements of claim 1.

Although Applicants disagree that claim 5 contradicts to claim 1, claim 5 is re-witted in an independent form (*see* claim 21) to clarify that, in addition to a flexible body, the filling aid with or without spacers can have a rigid terminal element.

Applicants request that the rejection be withdrawn.

Claims 1-20 are rejected under 35 U.S.C. 103(a) over Hundtofte et al., US 3,608,751, or Bayer et al., EP 0548999, in view of James, US 3,749,258. The rejection is traversed because

(1) the combination of the references does not describe filling a thin tube (50 mm or less), a ratio of the cross sections of the line and the tube being from 0.003 to 0.08, spacers extending perpendicular to the longitudinal direction of the flexible line, and a rigid terminating element attached to the flexible line having density greater than that of the flexible body;

(2) combining the method of Hundtofte et al. or Bayer et al. with the James method is technically improper and leads to an inoperable invention; and one would not have expected

the Hundtofte or Bayer line which has blades or bristles and does not have a rigid terminal element would have worked in the James method;

(3) the combination of the references does not describe a method, wherein a bulk density of the packed catalyst and a pressure drop is lower than the bulk density and the pressure drop of a free-fall method of charging the vertical tube having the internal diameter of 50 mm or less with the catalyst particles (claims 25-26); and

(4) an optimum ratio of the line and tube cross sections for a narrow tube of the claimed invention provides an unexpected result.

Hundtofte et al. describe a method of charging a vertical tube having an internal diameter of 75-125 mm and a flexible line held vertically in the tube (fig. 1 and col. 1, lines 64-73). The flexible line has multiple inclined blades (e.g., 30-45° angle to the axis of the line; col. 2, lines 37-40, fig. 1) and is retrieved during the filling process so that it is kept above the catalyst level in the tube (col. 2, lines 14-19).

Hundtofte et al. also discloses that in a free-fall procedure, a total charge (i.e., support charge and catalyst charge) of 625.75 oz is introduced in a vertical catalyst tube (col. 3, line 72 of Table I.A), whereas in the plain manila-line procedure a total charge of 653.25 oz is introduced (col. 4, line 6 of Table I.B), i.e., the plain manila-line procedure results in a *higher* bulk density of the packed catalyst than the free-fall procedure.

Hundtofte et al. do not describe filling a thin tube (50 mm or less as claimed), a ratio of the cross sections of the line and the tube being from 0.003 to 0.08, spacers extending *perpendicular* to the longitudinal direction of the flexible line (claim 6), and a rigid terminating element attached to the flexible line (claim 5).

Moreover, in the claimed process, it has been found that bulk density of the packed catalyst is *lower* compared to a free-fall procedure and, consequently, the pressure drop is significantly lower than when the catalyst tube is charged without a filling aid. In

comparative Example 1, wherein 2160 g of a catalyst are introduced without a filling aid, the average filling height was 373.20 cm (see pages 6-7 of the present specification). In the Example 2, three portions of 720 g catalyst (equaling a total of 2160 g) were introduced into the tube according to the claimed method (see pages 7-8 of the present specification). The average filling height was 383.14 cm. The increased filling height indicates a less dense catalyst packing. The average differential pressure in Example 2 is 72.93 mbar, which is lower than 91.73 mbar in comparative Example 1.

Thus, Hundtofte et al. do not describe that a bulk density of the packed catalyst and a pressure drop is *lower* than that of a free-fall method of charging a thin vertical tube (claims 25-26).

Bayer et al. describes filling a tube having a diameter of 100 mm and a flexible line held vertically inside the tube which is retrieved during the filling with a catalyst (claim 1 and example 1). The flexible line has attached bristles which are *inclined* (compared to be perpendicular as claimed) to the axis of the line (*see* figures). Contrary to the Examiner's assertion, the bristles in Bayer et al. do have a projection on a plane perpendicular to the longitudinal direction of the filling aid (*see* Figures 2-3, wherein the filling line is extremely thin and, therefore, has a small projection). For example, rings 8, string 9 and strings 7 must have a projection larger than the cross section of line 4.

Bayer et al. do not describe filling a thin tube (50 mm or less as claimed), a ratio of the cross sections of the line and the tube being from 0.003 to 0.08, spacers extending *perpendicular* to the longitudinal direction of the flexible line, a flexible filling line without outward extensions, and a rigid terminating element attached to the flexible line.

Moreover, Bayer et al. do not describe that a bulk density of the packed catalyst and a pressure drop is *lower* than that of a free-fall method of charging a thin vertical tube. For example, in a free-fall column charge the average bulk density is 1.00 kg/l, while in the

charge using a filling aid having inclined bristles, the average bulk density is 1.11 kg/l, i.e., a free-fall catalyst charging provides lower bulk density (i.e., the situation is inverted compare to that claimed).

James does not cure the deficiency of Hundtofte et al. or Bayer et al..

James describes a filling process of a tube having a diameter about 1.5 inches (about 33 mm) (col. 3, last paragraph to col. 4, line 44) and a flexible line without outward extensions except for a terminal plug made (figures). The James line is not retrieved during the filling but is lowered by the catalyst particles loaded on the top of the plug so that the line is not located above the catalyst layer (fig. 1, claim 1). The plug is then melted and the line is withdrawn (claim 1).

Combining the method of Hundtofte et al. or Bayer et al. with the James method is technically improper and leads to an inoperable invention because Hundtofte et al. and Bayer et al. require the line to have outward spacers and to be always above the catalyst, while the James line does not have extensions, is lowered by the catalyst and is always "inside" the catalyst layer. Therefore, one would not have reasonably expected that the methods of Hundtofte et al. or Bayer et al. for "thick" column would have worked for the "thin" James tube. Also, one would not have expected the Hundtofte or Bayer line having blades or bristles would have worked in the James method for packing a thin column.

The present specification discloses that the known methods of filling a tube with a catalyst are unsuitable for a tube with a smaller diameter (e.g., smaller than 100 mm) and using a line with blades and/or bristles in a narrow tube is difficult and leads to blocking the tube and enmeshing the catalyst particles (page 1, last paragraph).

In addition, discovering an optimum ratio of the line and tube cross sections for a narrow tube is not routine because the inventors surprisingly discovered that in the case of a small tube cross section, a sufficient reduction in the velocity of descent of the catalyst

particles can be achieved by an appropriate cross section of the line and that additional damping elements extending outward from the line could lead to enmeshing of the catalyst particles and are not necessary compared to the tube with a greater diameter (page 2, lines 23-29).

While the Examiner admits that James does not explicitly describe the claimed ratio of the line and tube's diameters, the Examiner is of the opinion that the line is clearly small and the ratio is likely within the claimed range (*see* page 5 of the Official Action). The Examiner's speculation that the James line is "clearly small" and "the ratio is likely" within the claimed range, is not sufficient to show that all claimed elements are described in the cited references.

Concerning the rigid terminating element (*see* claim 21), the James plug does not necessarily has density greater than that of the flexible body as claimed. For example, when the filling aid is made of steel (col. 3, line 4), the James plug made of ice (col. 3, lines 54-55) has lower density.

Thus, the combination of references does not make the invention obvious.

Applicants request that the rejection be withdrawn.

A Notice of Allowance for all pending claims is requested.

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